Journal of Physics: Conference Series 2016 vol.669 N1

# Erosion of electrode metal in the electric discharge under the exposure of the electrolyte stream

Shakirov Y., Valiev R., Khafizov A., Khakimov R.
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

## Abstract

The discharge between solid and liquid electrodes under the normal atmospheric conditions (SATP) was investigated. As electrodes, the metal materials and unsaturated salts solutions are used. Such discharge takes place in the range of voltage from 510 V to 525 V, a current from 0.2 A to 6 A, a electrolyte liquid flow rate from 2 cm3/s to 14 cm3/s, an electrolyte stream length from 5 mm to 40 mm. Increasing the flow rate of electrolyte liquid increases the discharge current. There are minimum and maximum critical values of the electrolyte flow rate of beyond which the existence of discharge is impossible. Specific values of the critical flow rate of the electrolyte depend on the nature, composition and stream length of the electrolyte. The electrical discharge between the electrolyte stream and a metal electrode is followed by erosion of the electrode material. The technique for local removal of metal by means of such a discharge is developed and the optimal values of erosion treatment parameters are determined. By using the discharge, technical processes of cleaning surface, deburring, drilling and cutting of metal materials were implemented.

http://dx.doi.org/10.1088/1742-6596/669/1/012064